

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

NOKIA SOLUTIONS AND NETWORKS
US LLC and NOKIA SOLUTIONS AND
NETWORKS OY,

Plaintiffs and
Counterclaim Defendants,

v.

HUAWEI TECHNOLOGIES CO. LTD. and
HUAWEI DEVICE USA, INC.,

Defendants and
Counterclaim Plaintiffs.

Civil Action No. 2:16-cv-00756-JRG-RSP

JURY TRIAL DEMANDED

**NOKIA SOLUTIONS AND NETWORKS US LLC AND
NOKIA SOLUTIONS AND NETWORKS OY'S
REPLY CLAIM CONSTRUCTION BRIEF**

TABLE OF CONTENTS

INTRODUCTION	1
ARGUMENT	1
I. DISPUTED TERMS OF THE 082 PATENT	1
A. “Message generation means”	1
B. “Determining means”	2
C. “Configuration”	4
D. “A downlink resource allocation grant has succeeded”	4
E. “Determining whether a third indication is to be transmitted”	5
II. DISPUTED TERMS OF THE 035 PATENT	6
A. “Means for determining” and “means for sending a reply”	6
B. “Scheduling information”	7
C. “Persistent allocation” and “Semi-persistent allocation”	9
D. “A downlink assignment index that indicates a number of downlink allocations grant for the [communication node/apparatus] in the scheduling information”	10
CONCLUSION	10

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>Advanced Aerospace Techs., Inc. v. United States</i> , 124 Fed. Cl. 282 (2015)	6
<i>Alfred E. Mann Foundation for Scientific Research v. Cochlear Corp.</i> , 841 F.3d 1334 (Fed. Cir. 2016).....	6
<i>Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC</i> , 748 F.3d 1134 (Fed. Cir. 2014).....	1
<i>Ericsson Inc. v. TCL Comm’n Tech. Holdings, Ltd.</i> , 161 F. Supp. 3d 438 (E.D. Tex. 2015).....	8
<i>GE Lighting Solutions, LLC v. AgiLight, Inc.</i> , 750 F.3d 1304 (Fed. Cir. 2014).....	9
<i>Grantley Patent Holdings, Ltd. v. Clear Channel Communications, Inc.</i> , 2008 Markman 112119, 2008 WL 112119 (E.D. Tex. 2008).....	6
<i>Liebel-Flarsheim Co. v. Medrad, Inc.</i> , 358 F.3d 898 (Fed. Cir. 2004).....	8
<i>Smartflash LLC v. Apple Inc.</i> , 77 F. Supp. 3d 535 (E.D. Tex. 2014).....	6
<i>SmartPhone Techs. LLC v. Research in Motion Corp.</i> , Nos. 6:10cv74 LED-JDL, 6:10cv580 LED-JDL, 2012 WL 3150756 (E.D. Tex. Aug. 2, 2012)	4

INTRODUCTION

Regarding the means-plus-function claims, the Parties agree as to what the function of the terms. Both the 082 Patent and the 035 Patent provide algorithms for their respective means-plus-function terms. Yet, Huawei argues for a much more exacting disclosure, one that is not required by the law. The other terms that Huawei contends are indefinite can be understood by a person of ordinary skill in the art with reasonable certainty. NSN therefore respectfully requests that the Court adopt its proposed constructions.

ARGUMENT

I. DISPUTED TERMS OF THE 082 PATENT

A. “Message generation means”

The crux of the dispute between the Parties is whether constellation mappings, such as those shown in Figures 3 and 4, are an algorithm for the “message generation means.” The law is clear that “an ‘algorithm’ may be expressed ‘in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure’ to a person of ordinary skill in the art.” *Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 748 F.3d 1134, 1140-42 (Fed. Cir. 2014). A person of ordinary skill in the art would understand how to implement an algorithm based on the constellation mappings shown in Figures 3 and 4 because modulation techniques for one-bit mappings (*e.g.*, binary phase shift keying (“BPSK”)) and 2 bit mappings (*e.g.*, Quadrature phase-shift keying (“QPSK”)) were well known in the art (Exh. A (Thompson Decl.) at ¶ 24). For example, the one-bit mapping of Figure 3 discloses an algorithm for each of the functions: (i) the location of the circle in Figure 3 represents the first configuration, (*e.g.*, SR without ACK/NACK), (ii) the location of the triangle represents the second configuration (*e.g.*, SR with ACK), and (iii) the location dot represents the third

configuration (*e.g.*, SR with NACK) (Dkt. 68-2 (082 Patent) at 7:34-59, Figs. 3-4). Thus, the constellation points show a specific way to implement the claimed configurations.

Despite Huawei's arguments to the contrary, NSN has shown that all four functions are disclosed in the 082 Patent. The "message generation means" (i) generates a message comprising and SR and then configures the message in (ii) a first configuration (when there is only SR) (iii) a second configuration (when there is SR with ACK), and (iv) a third configuration (when there is SR with NACK). Huawei's Response argues that the patent specification does not separately disclose "generating a message comprising a scheduling request." Yet, each of the three configurations discussed above and their disclosed constellation points are messages comprising an SR. Further, the flowchart in Figure 8 describes transmitting information "using the SR resource" when SR=1 (Dkt. 68-2 (082 Patent) at Figure 8, Block 8B). A person of skill in the art would know that, SR are positive or negative valued (*id.* at 7:39-42). SR=1 refers to a "positive SR" transmission where the UE desires to generate and transmit an SR (*id.* at 7:41-42). SR=0 refers to a "negative SR" which indicates that the UE does not desire to transmit a SR (*id.*) When SR=1, *e.g.*, in case of positive SR transmission, SR may be transmitted through on/off keying on the SR resource (Dkt. 68-2 (082 Patent) at 2:62-64; Exh. A (Thompson Decl.) at ¶ 22). Therefore, by choosing positive SR transmission on the SR channel, the UE is "generating a message comprising a scheduling request."

B. "Determining means"

First, Huawei's Response regarding the "first determining means" and "second determining means" alleges a dispute regarding the function where none exists. Huawei argues NSN's paraphrasing of the function "determining whether ACK or NACK is to be transmitted with SR" is incorrect (Dkt. 71 at 9-10). Here the "message" is an SR, thus NSN's representation of the

function is accurate (Dkt. 68-2 (082 Patent) at claim 10 (“generating a message comprising a [SR]”)).

Second, Huawei argues that claim 10 does not require an ACK to be mutually exclusive from a NACK (Dkt. 71 (Huawei Responsive Brief) at 10). But this is inconsistent with Huawei’s arguments regarding the method claim counterparts of claim 10. Regarding the counterpart, *i.e.*, claim 1, Huawei stated that, in response to receiving from the downlink channel, the UE will “send an ACK *or* NACK as appropriate” (Dkt. 71 at 14 (emphasis added)). This is confirmed by the algorithm disclosed in the patent specification for the function of “determining whether [an ACK or NACK] is to be transmitted.” For example, the specification states that “the acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly” (Dkt. 68-2 (082 Patent) at 12:25-29), while “the negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected correctly” (Dkt. 68-2 (082 Patent) at 12:20-24). Using this description of the algorithm, a person of ordinary skill in the art would be able to implement the means for determining whether an ACK or NACK is to be transmitted. This is further confirmed because the mechanism for transmitting ACKs or NACKs was well known in the art (Exh. A (Thompson Decl.) at ¶ 30).

Third, Huawei argues that NSN has read out “is to be transmitted in the same sub-frame as the message” (Dkt. 71 at 10). This completely ignores the portions of NSN’s opening brief discussing this aspect of the function. For example, NSN stated “[t]he patent also describes ‘determining whether an ACK or NACK *is to be transmitted in the same subframe as the message*’” and then went on to explain the function (Dkt. 68 at 10) (emphasis added). Curiously, Huawei also challenges this assertion by calling it a “made-up function” (Dkt. 71 at 11). Thus,

Huawei has taken contradictory positions arguing that: (i) NSN has supposedly *read out* a limitation; and (ii) that the same language is *not* a limitation.

As NSN made clear, Figure 8 and the accompanying text discloses the algorithm for determining whether (i) an ACK is to be transmitted in the same subframe as the message, *i.e.*, SR + ACK and (ii) a NACK is to be transmitted in the same subframe as the message, *i.e.*, SR + NACK. Figure 8 and the passage clearly show that the ACK/NACK is to be transmitted with the SR when SR=1 (*see, e.g.*, Dkt. 68-2 (082 Patent) at 7:39-43; Exh. A (Thompson Decl.) at ¶ 32). Therefore, the specification sufficiently discloses an algorithm for disputed means-plus-function terms of claim 10.

C. “Configuration”

The invention of the 082 Patent is directed to the configurations for sending SR and ACK/NACK simultaneously. Huawei (and Dr. Laneman) do not dispute the term “configuration” as used in the claims may include a “constellation point” (Dkt. 71 at 12-13; Dkt. 71-1 at ¶¶ 36-37). Instead, Huawei and Dr. Laneman argue that “configuration” includes something else, without explaining what that something else is. NSN’s proposed construction is consistent with how a person of ordinary skill would understand the term in the context of the patent specification (Exh. A (Thompson Decl.) at ¶¶ 34-37). Thus, the Court should adopt NSN’s construction of “configuration” as “constellation point.”

D. “A downlink resource allocation grant has succeeded”

The claim language “a downlink resource allocation grant has succeeded” has a plain and ordinary meaning. Huawei’s construction will confuse the jury because it will have to determine what a “message” is and what “successfully received” means. *SmartPhone Techs. LLC v. Research in Motion Corp.*, Nos. 6:10cv74 LED-JDL, 6:10cv580 LED-JDL, 2012 WL 3150756, at *13 (E.D. Tex. Aug. 2, 2012).

Further, Huawei's construction for this term is inconsistent with Huawei's construction of "scheduling information" in the 035 Patent. Huawei has proposed construing "scheduling information" as a "single signal containing one or more downlink allocation grants." Notably, in the context of the 035 Patent, Huawei did not construe downlink allocation grants as being "a message." Huawei's inconsistent construction between the 082 and 035 Patents further confirms that the language will not assist the jury and that it should be rejected by the Court.

E. **"Determining whether a third indication is to be transmitted"**

A person of ordinary skill would understand this claim phrase, even though "a downlink resource allocation grant," "a subframe," and an "indication of a scheduling request" were recited earlier in the claim. The 082 Patent is directed way to implementing "simultaneous transmission of SR and ACK/NACK" (Dkt. 68-2 at 2:55-56). In the context of the claim, these terms are used in clearly distinct circumstances, and for determining which circumstance applies. Specifically, the claims are directed to "determining" whether to send: (i) SR (first indication), (ii) SR and ACK (second indication), or (iii) SR and NACK (third indication) (*see also* Dkt. 68-2 at 13:50-62). Claim 1 makes clear that the message is configured according to one of these circumstances and sent "in the subframe" (*id.* at 16:7-8). A person of ordinary skill in the art would readily understand that the determining step: (i) is in response to the same downlink resource allocation grant and its corresponding codeword(s); (ii) relates to the same subframe; and (iii) determines whether to send the "indication of a scheduling request" (Exh. A (Thompson Decl.) at ¶¶ 40, 43). And Huawei's expert, Dr. Laneman, readily understood the claim to be written that way (Dkt. 71-1 at ¶ 46).

Huawei's alternative interpretation—determining that the NACK is in response to a different downlink resource allocation grant and sent with a different SR indication in a different subframe—is unreasonable when the claim is read in light of the specification and basic principles of signaling. The Parties agree that one of the purposes of the invention is to be able to send SR

and NACK together (Defendant’s Technology Tutorial at 38-41). Huawei’s alternative interpretation would not allow that purpose to be achieved (Exh. A (Thompson Decl.) at ¶ 45). *See Advanced Aerospace Techs., Inc. v. United States*, 124 Fed. Cl. 282, 297 (2015) (finding a claim term definite where a person of ordinary skill in the art could be reasonably certain about the meaning of a claim term “[i]n light of the purpose of the invention” even if there are multiple interpretations). Thus, a person reading the claim language would understand with reasonable certainty that “determining whether a third indication is to be transmitted” refers to “downlink resource allocation grant,” the “subframe,” and the “indication of scheduling request” that was previously referenced. *Smartflash LLC v. Apple Inc.*, 77 F. Supp. 3d 535, 560 (E.D. Tex. 2014) (finding that “[r]eading the plain language of the claim, a person of ordinary skill would understand with reasonable certainty that the second statement is referencing the first”).

II. DISPUTED TERMS OF THE 035 PATENT

A. “Means for determining” and “means for sending a reply”

The only disputes are whether the specification discloses algorithms for “determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received” and for “sending a reply in response to the determining.” First, regarding the “means for determining,” Huawei argues that the algorithm is insufficient because it does not disclose how to determine (Dkt. 71 at 19), and then Huawei tries to dismiss an explicit teaching of how to determine, *e.g.*, comparing DAI’s, as “a technique, not an algorithm” (Dkt. 71 at 20). This alleged distinction between a “technique” and an “algorithm” is not the law, which does not require disclosure of every detail of the algorithm. *Grantley Patent Holdings, Ltd. v. Clear Channel Commc’n, Inc.*, 2008 Markman 112119, 2008 WL 112119, *14 (E.D. Tex. 2008) (stating that the specification does not need to “disclose exactly what mathematical algorithm will be used”); *Alfred E. Mann Found. for Scientific Research v. Cochlear Corp.*, 841 F.3d 1334, 1345 (Fed. Cir. 2016)

(reversing a finding of indefiniteness where a person of ordinary skill in the art would know to use Ohm's Law in an algorithm for calculating impedance even though not explicitly disclosed). A person of ordinary skill in the art would have understood how to implement the details of the algorithm disclosed in the 035 Patent (Exh. B (Camp Decl.) at ¶¶ 16-27).

Second, the "means for sending" "send[s] a reply . . . that comprises an indication of discontinuous transmission in response to the determining," for which there is also adequate disclosure of an algorithm. For example, the specification discloses algorithms well-known by those skilled in the art, such as the disclosure that "Hadamard-spreading code selection is used to send the reply" (Dkt. 68-3 (035 Patent) at 6:65-7:1; Exh. B (Camp Decl.) at ¶ 25). The 035 Patent also discloses an embodiment where the UE transmits a single DTX bit (Dkt. 68-3 (035 Patent) at 9:43-10:55, Fig. 6). Block 6C shows that "the UE transmits a discontinuous transmission DTX indication with the UE's reply to the scheduling information" (*id.*).

B. "Scheduling information"

Huawei's proposed construction attempts to limit the claims to a single embodiment and should be rejected. The claims of the 035 Patent do not limit "scheduling information" to a "single signal containing one or more downlink allocation grants"

Huawei's attempt to limit the invention of the 035 Patent creates multiple contradictions. First, Huawei argues that scheduling information is a "single signal/message containing one or more downlink allocation grants" (Dkt. 71 at 24-27). Huawei appears to have expanded its construction to be a single signal or signal message. As mentioned above, Huawei and Dr. Laneman argue that a "downlink allocation grant is a message" in the context of the 082 Patent (Dkt. 71 at 14). If we attempt to reconcile Huawei's statements, Huawei's positions result in the disingenuous result that scheduling information is a "*single message that contains one or more messages.*"

Second, Huawei requires that “scheduling information” contains “one or more downlink allocation grants.” NSN does not dispute that “scheduling information” may include one or more downlink allocation grants. Huawei’s construction, however, requires “scheduling information” to include a downlink allocation grant. Huawei’s construction cannot be correct because after “receiving scheduling information” the next step in the claim is “determining that at least one downlink allocation grant ...was not received.” Huawei’s construction thus, eliminates the possibility that no downlink allocation grants were not received.

Third, Huawei argues that because Figure 3 includes “a signal,” scheduling information is limited to a single signal. Figure 3 also recites “a downlink allocation grant,” yet Huawei agrees that scheduling information includes “one *or more* downlink allocation grants.” This demonstrates that Huawei knows that the article “a” does not imply “only one” and that Huawei’s “single signal” argument is unsupported by the reference to “a signal.”

Similarly, Figure 6 does not limit “scheduling information” to a “single signal” or a “single message.” The 035 Patent discloses that the scheduling information is transmitted on the Physical Downlink Control Channel (PDCCH). Because it is a channel, the PDCCH may carry one or more signals (Exh. C (Camp Decl.) at ¶ 31). Even Huawei’s brief confirms that channels may contain multiple signals, when it states that “the UE can then attempt to receive the **downlink channel** on the resources specified in the grant, [and] try to decode the **signals** it receives” (Dkt. 71 at 14). Thus, the specification’s reference to a “single PDCCH” describes a single channel that may include multiple signals. Moreover, even if the disclosure of a “single PDCCH” somehow meant a “single signal” (which it does not), it is improper to read limitations from a preferred embodiment into the claims. *Ericsson Inc. v. TCL Comm’n Tech. Holdings, Ltd.*, 161 F. Supp. 3d 438, 444 (E.D. Tex. 2015) (citing *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir.

2004)); *GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014). Thus, Huawei's construction should be rejected.

C. **"Persistent allocation" and "Semi-persistent allocation"**

A person of ordinary skill in the art would understand the terms "persistent allocation" and "semi-persistent allocation" to be synonymous with persistent scheduling and semi-persistent scheduling (Exh. B at ¶¶ 33-34). Huawei's expert, Dr. Laneman, readily admits that "persistent scheduling" and "semi-persistent scheduling" are known and understood (Dkt. 71-1 at ¶ 67).

The patent specification states that "[i]n persistent allocation the UL resources are allocated persistently to the UE and thereby UL allocation grants are not sent (Dkt. 68-3 (035 Patent) at 5:28-31)." This is consistent with persistent scheduling, a concept known to one of ordinary skill in the art (Exh. B (Camp Decl.) at ¶ 33). Even Huawei's expert explains persistent scheduling similarly to the 035 Patent's description of "persistent allocation" (Dkt. 71-1 at ¶ 67 ("In persistent scheduling, the eNodeB grants persistent allocations...")). Thus, a person skilled in the art would understand that persistent allocation refers to resources that are allocated continuously and therefore do not need to be allocated using allocation grants (Exh. B at ¶ 33). Huawei argues that this description of persistent allocation refers to the uplink, but it does not explain why the description of persistent allocation would change when applied to the downlink. A person of ordinary skill would understand the description as applying equally to the both (*id.*).

Similarly, "semi-persistent allocation" is definite because it refers to resources that are sometimes allocated continuously (Exh. B at ¶ 35). This is consistent with the term semi-persistent scheduling (Exh. B at ¶ 34). As NSN made clear in its opening brief, semi-persistent scheduling is different from persistent scheduling because semi-persistent refers to an allocation that is not always persistent (Dkt. 68 at 23). Huawei and Dr. Laneman seem to agree with this concept. In sum, both terms are definite and would be understood to have the meaning proposed by NSN.

D. “A downlink assignment index that indicates a number of downlink allocations grant for the [communication node/apparatus] in the scheduling information”

The small typographical error in the claim phrase can be easily corrected because the meaning of the term is easily ascertainable (Exh. B (Camp Decl.) at ¶ 36). The fact that it might be corrected in two ways, both of which achieve the same result, does not mean that the claim is indefinite.¹ A person of ordinary skill in the art would readily understand that the “number of downlink allocations grant” refers to the number of downlink allocations granted (Exh. B (Camp Decl.) at ¶¶ 36, 38). For example, Huawei’s expert, Dr. Laneman, states that a person of ordinary skill in the art could understand the claim phrase to mean “a number of downlink allocation grants” (Dkt. 72-1 at ¶ 72). This is a distinction without a difference. A person of ordinary skill in the art would understand “a number of downlink allocation grants” to indicate the number that had been granted, as in NSN’s proposal. As Huawei states in its own brief, a “downlink resource allocation grant” is a message “granting a downlink resource allocation” (Dkt. 71 at 14). A person of ordinary skill in the art would understand this phrase as having the same scope, whether construed using “allocation grants” or “allocations granted” (Exh. B (Camp Decl.) at ¶ 37). NSN’s proposal of “downlink allocations granted” can be used interchangeably with “downlink allocation grants” or even “downlink allocations” (as previously proposed by NSN).

CONCLUSION

For the foregoing reasons, NSN respectfully requests that the Court adopt its proposed constructions.

¹ In its cases against T-Mobile and NSN, Huawei itself corrected at least one claim term that did not make grammatical sense. *Huawei Tech. Co. LTD., v. T-Mobile US, Inc.*, 2:16-cv-00052-JRG-RSP, Dkt. 110 at 1-2 (E.D. Tex. Dec. 9, 2016)

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CERTIFICATE OF SERVICE

I hereby certify that on April 7, 2017, I caused the foregoing document to be electronically filed with the Clerk of the Court using CM/ECF, which will send notification of such filing to all registered participants.

/s/ John D. Haynes

John D. Haynes